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UNDERSTANDING OPERATIONAL FIRES
AND INTERDICTION

by

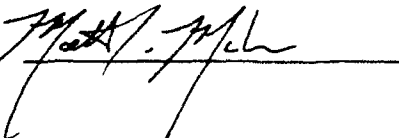
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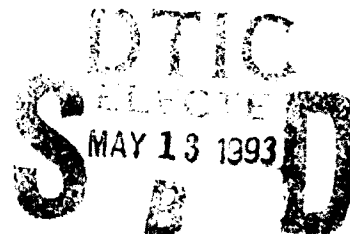
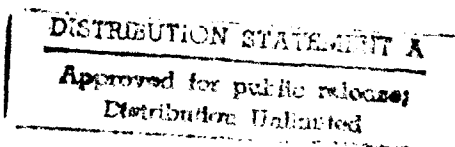
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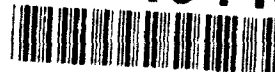
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Abstract of
UNDERSTANDING OPERATIONAL FIRES AND INTERDICTION

United States Military Forces are reducing in size and system redundancy between services is being eliminated. Based upon the last three U.S. conflicts, the only successful form of strategic, operational and tactical employment will be in the joint use of complementing forces. The operational commander now has numerous operational fires and interdiction capabilities available for the amelioration of operational unity of effort. The problem is that a systematic and synchronized approach to employing fires and interdiction does not exist. This paper provides examples of assessments and evaluations from previous conflicts and major training exercises. Identified within these after action reviews are the shortfalls and lack of coordination in maximizing all systems under the control of the Joint Force Commander.

Some readers believe that our joint doctrines are "abreast" with the advance of joint development, and this is generally true. This thesis merely points out that planners and developers of joint doctrine need to fully review and consider all the services' operational fires and interdiction capabilities. The thesis concludes with suggested operational conceptions and methods to improve functional proficiency.

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Glossary of Terms

A2C2	Army Airspace Command and Control
ABCCC	Airborne Command and Control Center
ACM	Air Control Measures
ACO	Air Control Operation
AGOS	Air Ground School
AO	Area of Operation
AOC	Air Operation Center
ATACMS	Army Tactical Missile Systems
BCE	Battlefield Coordination Element
BDA	Battle Damage Assessment
C2	Command and Control
C3	Command, Control and Communication
CINC	Commander in Chief
EAC	Echelon Above Corps
FSCL	Fire Support Coordination Line
FSCM	Fire Support Coordination Measures
FSE	Fire Support Element
JFC	Joint Force Commander
JSTAR	Joint Surveillance Attack Radar Systems
JTBC	Joint Targeting Coordination Board
JTL	Joint Targeting List
JTTP	Joint Tactics, Techniques and Procedures
NGF	Naval Gunfire
PGM	Precision Guided Munitions
REFORGER	Return of Forces to Europe
RIPL	Reconnaissance Interdiction Planning Line
SEAD	Suppression of Enemy Air Defense
TCE	Theater Coordination Element
TLAM	Tomahawk Land Air Missile

UNDERSTANDING OPERATIONAL FIRES AND INTERDICTION

CHAPTER I

INTRODUCTION

Thesis. With the emergence of modern technology in theater level targeting and precision guided munitions, operational fires have become a form of maneuver when synchronized with operationally decisive objectives. However, the development of new deep-strike weapons, many of which are classified and in various stages of development, blur the formerly distinct roles of the armed services.

Joint Publications: 3.03 (Doctrine for Joint Interdiction Operations) and 3.09 (Doctrine for Joint Fire Support) are good "base line" documents and provide for a broad perspective, but are not, nor are intended to be joint tactics, techniques, and procedures (JTTPs) manuals. The challenge is how to augment all fire support and interdiction capabilities in a complementing and sequential employment. The development of an operational art "system of systems," must occur to institutionalize doctrine, training, and crisis responsiveness and effectiveness. The purpose of this paper is to identify shortfalls and implications for the improvement of operational unity of effort. This thesis leads to a systematic revision of current operational fires and interdiction planning and execution. Readers will foster a greater appreciation for the complexities of force application and better understanding of capabilities/limitations.

Definition. The understanding of what are operational fires and interdiction are critical to the proper employment and use of these combat capabilities. Joint Publication 3.0 (Draft) states "interdiction at the operational level diverts, disrupts, delays, or destroys the enemy's surface or subsurface military potential before it can be used effectively against friendly forces." Interdiction at the operational level comprises attack helicopters, fighter aircraft/bombers, naval gunfire, sea-launched missiles, and surface-to-surface rockets and missiles. Interdiction and operational fires should be considered synonymous with each other. Fires are planned and executed for campaign objectives. They focus on targets that allow forces to seize and retain the initiative.

The conflicts and missions of the future will be executed in a joint arena with all branches of the services mutually supporting each other. Response to any crisis will integrate joint service capabilities across the operational level fire support system. Operational interdiction may include combined military forces as well as joint forces. Coalition forces will also bring capabilities into theater that will influence the planning of operational fires and interdiction.

The phrase operational fire is an inventive term. It is viewed as the application of firepower to achieve a decisive impact on the conduct of the campaign, which by current joint doctrine is a combination of fire power from all four services toward a common theater goal or military condition. Operational fires are tailored to three primary functions: facilitating maneuver to the

operational depths; isolation of the theater war zone through interdiction; and eradicating the enemy's critical functions and facilities that contribute to his capability to wage war. Figure 1 displays' TRADOC's view of the functions of operational fires.

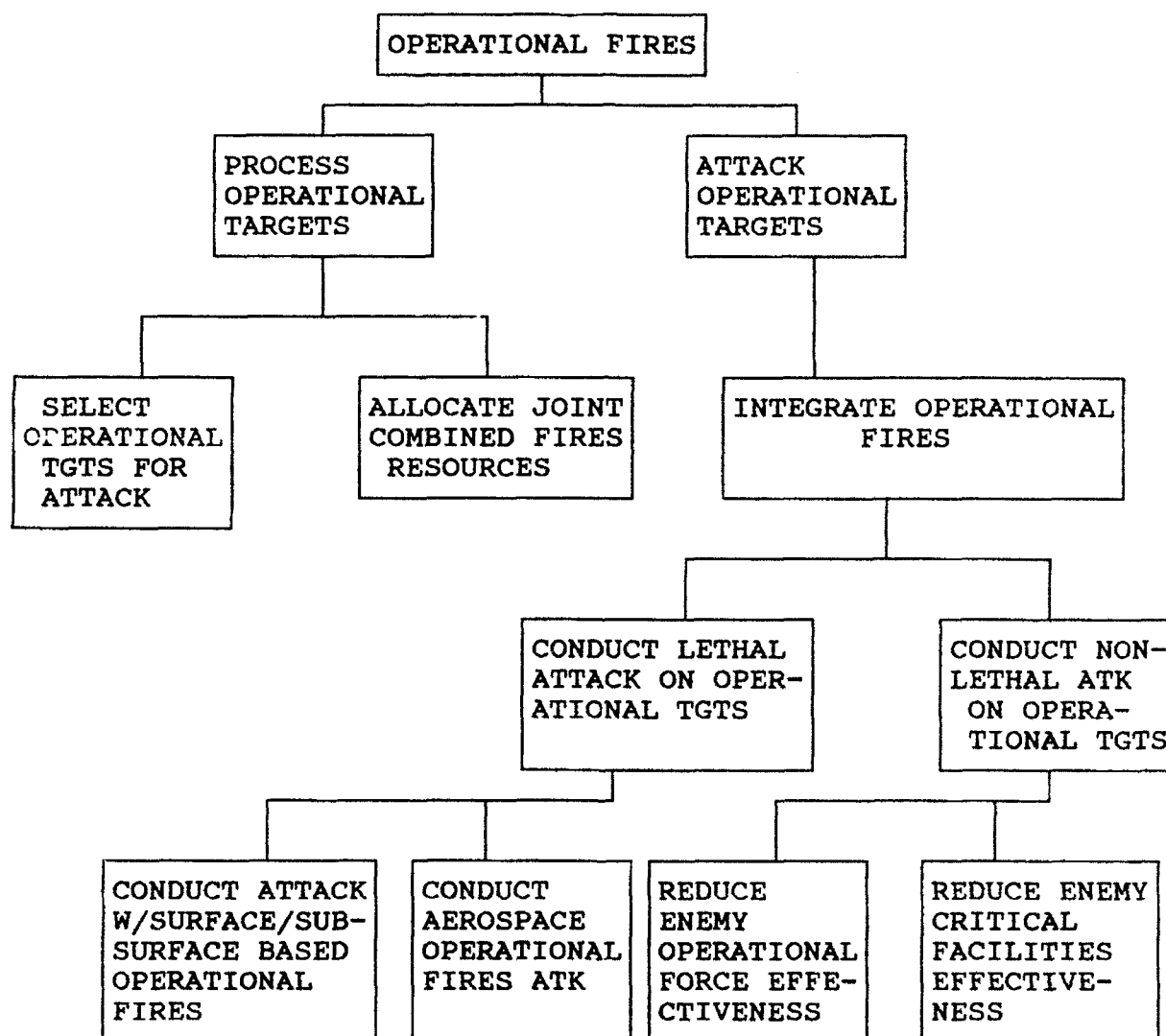


Figure 1. Operational Fires.

Source: TRADOC PAM 11-9. Operational Blueprint. p. 4-5

SYNCHRONIZATION OF OPERATIONAL FIRES AND
INTERDICTION
CHAPTER II

Capabilities. Since the operational commander focuses upon the shaping of future operations, it is critical that he and his staff understand the fire power systems available for operational interdiction. Each service brings its own capabilities into theater and the key is to capitalize on the technical and tactical capabilities of each system. "The Joint Force Commander's task is to integrate the available capabilities and synchronize their application to achieve the assigned objective(s)."¹ Emphasizing joint systems for operational interdiction must achieve a complementary and simultaneous application of force. To fully coordinate implementation and take advantage of the leverage new technology offers, commanders and planners must understand the capabilities and limitations of weapon systems and their operations. Synchronizing air, land, and sea interdiction is multidimensional in that one form of combat application is employed to enable or enhance another. For example, land fires are conducted to suppress enemy air defense systems (SEAD) thus enabling air operations to enjoy a higher probability of success.

Brilliant and genius "fire and forget" warheads, extended range fire support systems, enhanced command, control, and communications (C3) systems, advanced targeting and selective electronic-warfare battlespace control have all changed the

military's decide-detect-deliver methodology. Illustrated at figure 2 is an unclassified capability chart that displays characteristics of operational systems used by the Joint Forces Commander (JFC):

OPERATIONAL FIRE SUPPORT/INTERDICTION WEAPON SYSTEMS				
SYSTEM	RANGE	MUNITIONS	GUIDANCE	SERVICE
ATACMS	62	DPICM	NONE, TRAJECTORY LAUNCHED	ARMY
TLAM	700	BLAST,FRAG, SUBMUNITIONS	ON-BOARD COMPUTERS	NAVY
NGF	20	HE, CP,	TRAJECTORY	NAVY
F15E	500	CBU,PENETRATOR 500/2000LB BOMBS	PRECISION (LASER) OR FREE FALL (RADAR/COMPASSIT)	AIR FORCE
F16	500	MAVERICK,HARM 500/2000LB BOMBS	PRECISION (LASER) OR FREE FALL (RADAR/COMPASSIT)	AIR FORCE
F18	300	CBU,ROCKEYE MINES,FUEL-AIR 1000LB BOMBS	PRECISION (LASER) OR FREE FALL (RADAR/COMPASSIT)	NAVY, MARINES
F117	350	2000LB BOMBS	PRECISION (LASER)	AIR FORCE
AH64	240	HELLFIRE	LASER DESIGNATED	ARMY
RANGE IS COMBAT RADIUS IN MILES				

Figure 2.

Command, Control and Coordination Measures and Problems. The most important tasks within the synchronization of operational fires are establishing the proper command relationships, controlling authorities and horizontal and vertical communication systems. As U.S. forces "draw down," the interdependence of force capabilities becomes critical to the success of the defined military objective. Employment of operational and tactically arrayed military organizations will be designed in a service linked system. The command and control of these joint operations will require that operational fires under the Joint Force Commander (JFC) be executed in a coordinated effort.

Command. The JFC will assign missions, redirect efforts and direct coordination among his subordinate commanders. "This guidance is required early on to ensure the optimum use of both joint fire support and interdiction assets as in many instances the same asset can perform both activities."² Subordinate commanders will be influenced by the estimate of the situation, mission requirements, and the composition of forces within the theater of operations. Normally, the appointment of a Joint Forces Land Component Commander (JFLCC), Joint Force Air Component Commander (JFACC) and Naval Forces Component Commander transpires during the allocation of forces. All three commanders have operational fires' capabilities, complicated by the coordination and ownership of systems.

Advanced technology is producing weapon systems that range the entire span of the operational area. (Figure 3)

Operational Interdiction Ranges

Depth of Operational Commander's Influence

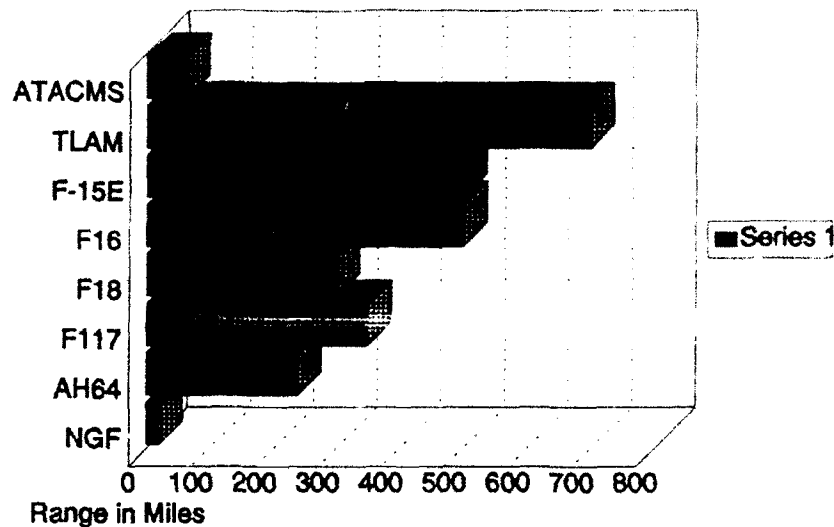


Figure 3.

Overlapping systems present a condition of merging force ratio factors (combat multipliers) into each respective commander's area of operations (AO). An example would be that the Tomahawk missile can influence the planning considerations of the JFLCC as much as can the Army Tactical Missile System (ATACMS). Pride of system ownership is still predominate, but the complicating nature and deconfliction of these systems must be addressed for mutual success. The command structure of Desert Storm was well established and very robust at the higher echelons of command, but the operational fires command lines were established as ad hoc,

which in this case did not provide for experienced relationships. The Army views the operational level as Corps and echelons above Corps (EAC) and felt in Desert Storm, fire support at EAC was disjointed.

Control. "Command and control of Joint Fires is complex. War planners and fire supporters at the Corps headquarters and echelons above Corps (EAC) must understand the capabilities of joint acquisition and attack systems."³ The control of joint fires is the cornerstone to the achievement of success. Desert Shield/Storm illustrated that the control of operational fires and/or interdiction needs to be established in doctrine. "In Southwest Asia, coordination, planning and execution problems arose because of the absence of an EAC Fire Support Element (FSE) during the initial phases of the operation."⁴ Most of the joint manuals have not addressed the tenets of proper control of operational level fires. These tenets are the joint tactics, techniques, and procedures (JTTP) required for smooth planning and execution.

Coordination. "Coordination is the primary means of synchronizing fire support. The purpose of coordination is to facilitate the bringing of fire to bear on the enemy. Coordination involves operational, tactical, and technical considerations and the exercise of fire support C3. It provides a way to deconflict attacks, reduces duplication of effort, facilitate the shaping of the ground commander's battlefield and avoids fratricide."⁵ Coordination and synchronization go hand in hand within the operational fires' system. The joint fires/interdiction plan must

ensure that air, land, and naval operations are compatible for initiation of attack procedures, also survivability and logistics sustainment.

"Operation Desert Storm observations are clear, our current joint doctrine fails to provide essential harmonization of fires and air space coordination."⁶ Coordination and control of joint fires at the operational level were previously concerned with the employment of air assets. The operational commander now has surface to surface fire assets in the form of ATACMS and Tomahawk land attack missiles (TLAM).

Deconfliction of indirect fires with air interdiction aircraft is now an operational concern. Within the North Atlantic Treaty Organization (NATO), operational procedures state that joint fires beyond the Fire Support Coordination Line (FSCL) are the responsibility of the Corps Commander (Army). With the coming of advanced missile systems, the operational level commander must be concerned with fires beyond the FSCL since he now can strike surface to surface at the operational depth. Previous deconfliction was accomplished through Air Force channels. Coordination and control with strictly the Air Force are no longer sufficient, nor are operational command posts staffed with the inadequate numbers of trained personnel and/or inappropriate equipment to perform the required deconfliction and planning. "The one weakness appears to be in Army airspace command and control (A2C2). This problem appears to be shortages of personnel, new personnel and a lack of proper training in airspace

deconfliction."7 Exercise evaluations in Europe indicate that "the ability of A2C2 cells to effectively and efficiently plan, execute, and modify the air control order (ACO) and the air tasking order (ATO) are severely hindered by a lack of secure voice and digital communication systems."8 To further elaborate on the problems of control of airspace coordination, the results from the 1992 REFORGER exercise and Desert Shield/Storm are reviewed. REFORGER '92 highlighted a lack of commonality among U.S. service components, joint doctrinal, NATO terms and coordinating control. A case in point was that the U.S. definition of coordinating altitude states that the penetration at the coordinating altitude will be coordinated before the penetration. NATO's definition says that penetrations will occur without any coordination and that coordinating aircraft altitudes relies primarily on the principle of the "see and avoid" method. This misunderstanding was the leading edge of a series of joint and combined airspace management problems that negated the ability to exercise centralized control. The JFC was unable to fully synchronize and deconflict plans that integrated the newer weapon systems of cruise missiles, AH-64 "Apache" attack helicopters and long range artillery systems (MLRS/ATACMS). "A2C2 and targeting cells must take into account the changing face of battle to ensure the complete and timely synchronization of all systems that use airspace to achieve the intent of the army group commander."

Occasionally during the Gulf War, ground firing elements were ready to fire on Iraqi targets only to have the mission aborted

because of problems coordinating airspace with the Air Force Air Operations Center (AOC). This problem is due to the improper use of the Fire Support Coordination Line (FSCL), a permissive Fire Support Coordination Measure (FSCM). The FSCL is a line established by the appropriate land force commander to ensure coordination of fires (air/ground) that effect land operations (tactical). The FSCL also provides for protection of friendly troops (short of the FSCL) while allowing for expeditious attack of targets beyond the FSCL. The major problem with the joint implementation of ground FSCMs and Airspace Control Measures (ACMs) is that FSCMs are not promulgated throughout the air interdiction area in the same manner as ACMs.

This problem with control and coordination of battlefield air activities compounds when you consider that most FSCMs are viewed in a two-dimensional overview, when in fact when consolidated with A2C2 their impact is three-dimensional. Additionally, this becomes even more critical with the addition of extended-range missile systems now available to the operational Commander (i.e. ATACM/TLAM). The current method of automated ACMs deconfliction occurs through a computer program entitled the Combat Airspace Deconfliction System (CADS). The weakness of this system is that it will not display a three-dimensional arc. Consequently the need for timely manual computations of trajectory and maximum ordinance altitude. Fortunately the development of the new Airspace Deconfliction System (ADS) is under development, and when employed will be three-dimensional and graphically amplified.

Joint doctrine is in a "catch up" mode with modern technology and current tactics, techniques and procedures. "At the present time, the echelon above Corps (operational level) is operating under pre-Cold War and unification support plans. These plans lack the flexibility and clarity to fully support the exercise play and provide clear guidance on the coordination of Joint Fires."¹⁰ The essence of combat operations in both the planning and execution of operational tenets is the understanding and compliance with joint doctrine. Many joint doctrinal publications are still in the "test" mode, and still searching for the crucial amalgam of fires and air space coordination.

Targeting. Targeting at the operational level is a sequential process that requires the involvement of the JFC, his staff, subordinate commanders and their respective staffs, and all intelligence gathering structures at the national and theater level. Joint Force planners develop objectives and guidance for the interdiction of enemy capabilities that will impact on the tactical battle. The targets derived from campaign planning will shape the battlefield for both current and future operations. Proper utilization of joint resources in optimizing capabilities is critical in operational attack guidance. "Joint Force Commanders organize Joint Targeting Coordination Boards (JTCBs). If the JFC so designates, a JTCB may be an integrating center for this effort or a JFC level review mechanism. In either case, it needs to be a joint activity, comprised of representatives from the staff, all

components and, if required, their subordinate units."¹¹ Once the target objectives and parameters are designated, synchronized and transmitted, the proper component(s) commands are authorized to conduct tactical and technical planning and execution. Battlefield Coordination Elements (BCEs) at the operational level of war must verify and carrying out target selection and strike procedures based on the JFC's criteria (priorities), capabilities, limitations, military condition to produce and last, all this must be accomplished using a common doctrine.

Despite the successes of Desert Shield's operational fires and interdiction, the targeting process was not without fallacy. Though a series of U.S. Central Command (USCENTCOM) Joint Targeting Conferences were held in Riyadh, Saudi Arabia (Oct-Dec 90), apparently all service components were concerned with the targeting system. The USCENTCOM J-3 had, in essence passed authority to the JFACC as the executive agent for joint targeting. The various component commanders felt that USCENTCOM J-3 was not exercising effective control of the targeting mechanism. Target nominations were not working under a centralized control system, as seen by the requirement to submit TLAM requests to naval commanders, air interdiction requests to JFACC, and special operations requests to Special Operations Command USCENTCOM. Although the command and control (C2) was designed for the JFACC to task elements outside air interdiction (see wire chart in Chapter One) it did not work this way on a regular basis, and even when it did, interoperability and coordination did not result in full synchronization.

"The overall joint targeting process at JFACC was dominated by Air Force officers, and thus lacked the essential "purple suit" ingredient that would have lent balance between the Air Force strategic view of targeting and the Army and Marine Corps' concern with shaping the battlefield before any ground offensive. An agency with its eye on the entire campaign (air, land, and sea) was needed to integrate the targeting effort quickly and efficiently with a joint flavor. The JFACC could not, in the opinion of the other components, perform these functions because he did not have the overall command perspective nor the authority to task all components . . . all components continued to strongly recommend that the J-3 constitute and chair a daily joint target board . . . This board was never formed, however, and components were forced to work within the cumbersome JFACC system throughout DESERT STORM."¹²

The bottom line in Desert Shield/Storm was that targeting was accomplished, but the efforts made to ensure flexibility and maintaining an established infrastructure would have been much easier with a joint oriented system. "Many targeting difficulties may have been prevented if joint and component targeting procedures had been standardized and exercised on a regular basis. Targeting is too important to ignore, and improvements are needed from the CINC level down."¹³ The concern would have been, what if the United States military forces and their allies did not have the time to work through the hurdles of joint targeting? Also, what would have been the effect on the JFACC and functional component commands (who owned operational level fire support/interdiction systems) if Iraq had launched an all-out offensive? The conduct of planning target selection and allocation of resources is much more difficult when the enemy is moving and constantly changing his array posture and profile. This could have been further intensified if the Iraqi Air Force had flown strike missions against the coalition's airfields, MLRS launchers, and Carrier Battle Groups.

Targeting should review three words: decide, detect and deliver. The JFC and his staff must be able to detect deep into the area of operations and decide methods of engagement well before future battles (24+ hours). Because of the distance of operational depth and the "unknowns" of a nonlinear battle, the primary operational acquisition assets to target detection and decision making are overhead platforms which can provide imagery information. These overhead detectors can be satellites or aircraft. In Desert Shield/Storm the Joint Surveillance and Target Attack System (JSTARS) validated itself.

JSTARS is comprised of an E8 aircraft (modified Boeing 707) containing a multi-mode radar, various communication and data link systems with operations and control consoles and an array of ground station modules (GSMs). It enables commanders to detect, locate, track and attack the enemy. Although JSTARS is still in a developmental stage, it has proved the ability to provide operational level intelligence and targeting information to the JFC. JSTARS worked well with the TACC merging their Airborne Warning and Control System (AWACS) with JSTARS targeting data. JSTARS assisted the TACC in last minute verification of the Air Tasking Order (ATO). JSTARS was used extensively for tracking movement for the Army and Marine Corps, also targeting for ATACMS and TLAMs in seeking out SCUD launchers.

Based on strategic directives and operational objectives the JFC and his staff decide what is critical to the success of the mission. The JFC shapes the battlefield by destroying,

neutralizing or delaying the enemy capabilities or his abilities to influence tactical engagements in the future. Operational planners develop a prioritized Joint Targeting List (JTL). The JTL has specific targets identified or identifies targets by a category. "It (the JTL) provides the targets that need to be attacked, when these targets are to be engaged and the desired effects. The list allows for the most effective and efficient use of the collection and attack assets. Targeting also includes receiving target nominations from subordinate commanders and coordinating them with the overall plan."¹⁴

Understanding and selecting the delivery method has become more complicated over the last years. This is attributed to the need for increased involvement of the JFC and his staff, additional numbers of fire support surface to surface systems (i.e. MLRS, ATACMS and TLAMs), and the interoperability and coordination of air interdiction with ground/sea fire support. The bottom line of successful targeting is weighing all available capabilities with their limitations, against what system will produce the highest measures of effectiveness with the lowest risk to friendly lives and equipment. Figure 4 displays' the operational level interdiction/fires systems with capabilities and limitations against various targets. This graph is just one consideration that joint target planners should review before deciding the best method of attack in ensuring objective success.

Considerations of Attacking Operational Targets

ATTACK SYSTEM	STRENGTHS	LIMITATIONS	OPTIMUM TARGETS
TLAM	Long range, secure firing platform, low risk to crew, high accuracy	Vulnerable to AAA, requires data downlink, can't change tgts once in flight	Fixed C2, and logistical pts and facilities
ATACMS	Good accuracy, all weather, decentralized control, low risk to crew, very responsive	Not as accurate as PGM, can't alter course after firing, not for pinpoint tgts	Hard or soft tgts, SEAD, large coverage, counterfire
NGF	Low trajectory, large stockpile, rapid rate of fire	Effected by sea conditions, limited range	Bunkers, hardened targets
Fighter Aircraft	Very Accurate w/PGM, adjust in flight, BDA, operational depth	Risk to crew, AAA and/or air to air threat, weather effects	Bunkers, point targets (strategic and operational), C3
F-117	Undetected flight, very accurate, large bombs (2000lbs) can adjust in flight	Long flight to tgts, some crew risk, limited payload, high technology loss if shot down	Radar sites, C3 facilities, air fields
AH-64 Atk Helicopter	Highly flexible and responsive, can fly under radar coverage	Ground fire, limited speed, limited ordnance limited range	SEAD, armor, radar sites

Figure 4.

Optimization of Operational Fires and Interdiction. How do we optimize, synchronize, and coordinate all the previously listed capabilities available to the JFC in pursuit of the campaign objectives? To achieve the synergistic effects required, we must tailor the proper combination of forces in sequenced execution to meet the threat with overwhelming superiority. The entire operational continuum is now our mission of focus, ranging from small third world countries with little or no military capabilities all the way through fighting forces of enormous capacity such as those possessed by Iran, Iraq and North Korea. The battlefield of the future will be an extended nonlinear joint battleground (to include sea), with the requirement to see and attack deep within operational depth.

At the operational level, joint fires and interdiction extend the battlefield by destroying the enemy's ability to generate and sustain combat power. Previously within this paper I have identified difficulty within the planning, coordinating and executing of operational fires and interdiction. The weakness lies in a lack of established doctrine and command, control, communications and intelligence structures keeping pace with our own weapons' technology and war fighting requirements.

Joint Publication 3.09 states, "The basic tasks of joint fire support are the requirements that the joint fire support system must fulfill. They provide the JFC and his staff a frame of reference to evaluate the over effectiveness of the fire support system."¹⁵ The tasks that Joint Publication 3.09 identifies are:

support the overall JFC plan, support the forces, synchronize fire support, and sustain fire support. These four primary tasks are just as applicable to air interdiction, and are one in the same. JFC's must be involved with both joint interdiction and joint fire support. The level of effort they expend in these areas reflects their own level of expertise and the type of operation. Regardless, there must be unity of effort in the operational command with centralized control (taskings) branching into decentralized execution at the proper level. This level is dependent on mission, equipment, time, troops, and terrain (land, sea, and air). The following possible solutions (operationally oriented, and not to be confused with force structure recommendations) are offered in response to issues addressed earlier within the body of this paper:

Management of Fires/Interdiction. A type of Battlefield Coordination Element (BCE) permanently assigned at the Unified Command level would provide for valuable coordination. This organization could be entitled a Theater Coordination Element (TCE), with the same responsibilities as a Corps Fire Support Element. This TCE could be comprised of a joint staff, with representation from all services that process operational level fires and interdiction capability. The TCE working under the Theater J-3 would: prepare the joint annex, advise the CINC or senior JFC on joint fire support and interdiction, synchronize the operational scheme between maneuver and fires, and provide for rapid coordination. Also, the TCE would be responsible for the

preponderance of firepower in the theater of operations. The TCE would exercise planning deconfliction of redundant measures and task mutually supporting systems. Governing the planning and decision template used by the TCE would be the use of operational fires and interdiction within the principles of war. Particularly the elements of: understanding a clear objective (also knowing the functional and operational aspects of the enemy), how to achieve the massing of resources at the proper point and time, unity of command in synchronizing the force, and simplicity of clear, concise and uncomplicated plans.

The TCE would not replace a BCE at EAC, but would ease the burden for centralized control and interoperability. Also, the TCE would exercise directives through a joint tasking order to the JFLCC, JFACC and Naval Commander. This would allow for a system of joint targeting and tasking that uses all available combat power in a COCOM, OPCON or TACON position. As the TCE is a functioning element of the J-3, "first hand" knowledge of the ground operations would facilitate interaction and synchronization with campaign goals and objectives. As the representative of the CINC and having attached personnel from each component on his staff, personalities and parochialism should be "kept in check." The TCE would have direct access to space-based intelligence and communications, also JSTARS, AirBorne Command and Control Center (ABCCC) and remotely piloted vehicles (RPV) for decide, detect and delivery assessment. Computer automation at the TCE would involve joint targeting and BDA linkage with intelligence sources as well the BCE at the

Tactical Air Control Center (TACC) and JFLCC planning staff. The air tasking order (ATO) (still developed by the JFACC) could be automated and cycled throughout the system with the TCE in an "over watch" position verifying compliance of the ATO with the CINC's intent. Targeting requests from the Tactical Commanders would flow through their respective component commands and if they impacted at the operational level the TCE grants approval/disapproval and possible augmentation with other supporting fires or interdiction capabilities. All data links would be real-time and use the best state of the art hardware and software available.

A2C2 and FSCM Strategic Correlation. As stated earlier, the new Airspace Deconfliction System (ADS) will vastly improve airspace and ground coordination. Information pertaining to fire support plans and activities forwards to the Army Airspace Command and Control elements within the TACC. These elements will ensure that the proper information flows into the ADS and deconfliction between airspace and surface (land/sea) occurs.

On future battlefields the Fire Support Coordination Line concept must be changed to ensure synchronization of the deep attack airspace users of ATACMS, TLAMs, and AH-64 helicopters. The forward edge of the Corps deep battle (beyond which is the operational commander's responsibility) should use the same destination as NATO, which is the reconnaissance and interdiction planning line (RIPL). The FSCL can continue to be used as a permissive FSCM, but the RIPL would be used as a discriminate control line. The senior JFC could use the RIPL as a means to

establish responsibility between air and ground operations. This would help ensure coordination, and rapid response between deep operational fires and aircraft navigating within the same area of operations.

All personnel regardless of service, that work within air and ground space management should attend the U.S. Air Force's Air Ground Operations School (AGOS). AGOS is an Department of Defense formal school designed to teach military personnel joint combat airspace command and control. AGOS is currently linking training curriculums with the Naval Strike Warfare Center.

CHAPTER III

INTERDICTION AND OPERATION FIRES WITH MANEUVER

Coordination of Maneuver with Operational Fires and Interdiction. Interdiction, operational fires and maneuver makeup the parts of the whole, when conducting planning and execution of operational objectives. "The synergy achieved by integrating and synchronizing interdiction and maneuver helps commanders optimize leverage at the operational level."¹⁶ Joint Commanders and their respective staffs must adjust the balance and degree of use of interdiction/fires to maneuver based upon the mission, capability, and outside parameters (i.e. rules of engagement), confronting them. The key is to place the enemy in an impasse and regardless of what choice he takes, the result is his defeat.

Interoperability among all services and command levels is not

only dominant common doctrine and coordination, but also clear and simplified communication. "The supported commander should articulate clearly the vision of maneuver operations to those commanders that will apply the interdiction forces within the boundaries to attack the designated interdiction targets or objectives."¹⁷ Maneuver commanders at all levels that dwell on the periphery of operational levels must understand the use of operational fires and interdiction in terms of current effects on maneuver and in facilitating future operations. This education on the use of the operational force interdiction/fires presents a large challenge. Evidence is the current lack of knowledge of how to employ air and ground fires exhibited by many of our tactical maneuver commanders.

CHAPTER IV

CONCLUSION

In summary, we as force planners and executioners of our national military strategy have much to learn about the operational art. The tenets of all services' respective use of the principles of war are common. This is for a very good reason, we must deploy, fight, and win as a combined joint team.

As the various respective services continue to draw down, the only successful form of strategic, operational and tactical employment will be the joint employment of complementing forces. Power projection using operational fires and interdiction is a

necessity to creating the military conditions to produce the strategic goal, as well as shaping the battlefield for a unified plan. As I have addressed within the body of this paper, orchestration of interdiction, operational fires and maneuver is a "system within a system," that must be constantly reevaluated for improvement. "A critic should never use the results of theory as laws and standards, but only - as the soldier does - as aids to judgement."¹⁸ Various concerns have been addressed and improvements suggested through this research paper. Wars of the future will require the JFC to integrate, and provide for symmetrical operations of air, land, sea and space to establish victorious campaign plans. These plans then serve as the synthesizer of strategic directives and synchronizer of tactical warfare.

ENDNOTES

1. Joint Publication 3.0 (Draft) 1993, p. 5
2. Joint Publication 3.09, Doctrine for Joint Fire Support, June 1991, (Final Draft) p. I-3.
3. MG Fred F. Marty, "On the Move," Field Artillery Journal, April 1992, p. 1.
4. Ibid.
5. Joint Publication 3.09, Doctrine for Joint Fire support, June 1991, (Final Draft) p. I-11.
6. LTC Sammy L. Coffman, "Fighting with Fires," Field Artillery Journal, June 1992, p. 13.
7. TRADOC Combined Arms Assessment Team (CAAT) REFORGER '92 Initial Impressions Report, October 1992, p. 5.
8. Ibid, p. 8.
9. Ibid, p. 14.
10. Ibid, p. 6.
11. Joint Publication 3.0 (Draft) 1993, p. 41.
12. LTC Stephen W. Dade, "Adventures in Targeting." Marine Corps Gazette, June 1992, pp. 34-35.
13. Ibid. p. 37.
14. Joint Publication 3.09, Doctrine for Joint Fire Support, June 1991, (Final Draft) p. III-6.
15. Joint Publication 3.09, Doctrine for Joint Fire Support, June 1991, (Final Draft) p. I-5.
16. Joint Publication 3.0 (Draft) 1993, p. 29.
17. Memorandum, A Doctrinal Statement of Selected Joint Operational Concepts, College of Naval Command and Staff, 15 January 1992, p. 17.
18. Carl Von Clausewitz, On War, Princeton University Press, 1989, p. 158.

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